

CLAIMS

What is claimed is:

1. An isolated nucleic acid molecule selected from the group consisting of SEQ ID NOS: 48-63 and 88-90.
- 5 2. An isolated nucleic acid molecule comprising a polynucleotide sequence at least 90% identical to a sequence selected from the group consisting of SEQ ID NOS: 48-56 and 88-90.
3. An isolated nucleic acid molecule comprising a polynucleotide sequence at least 90% identical to a sequence selected from the group consisting of SEQ ID NOS:
10 57-63.
4. An isolated nucleic acid molecule consisting of about 15 to 50 consecutive nucleotides from a nucleotide sequence according to Claim 2.
5. An isolated nucleic acid molecule consisting of about 20 to 50 consecutive nucleotides from a nucleotide sequence according to Claim 3.
- 15 6. An isolated nucleic acid molecule consisting of about 20 to 50 nucleotides which is the complement of a nucleic acid sequence according to Claim 4.
7. An isolated nucleic acid molecule consisting of about 20 to 50 nucleotides which is the complement of a nucleic acid according to Claim 5.

8. An isolated nucleic acid molecule comprising a polynucleotide sequence of about 20 to 50 nucleic acids which is at least 80% identical to a sequence according to Claim 2.
- 5 9. An isolated nucleic sequence molecule comprising a polynucleotide sequence of about 20 to 50 nucleic acids which is at least 80% identical to a sequence according to Claim 3.
10. An isolated nucleic sequence molecule selected from the group consisting of SEQ ID NOS: 30-47.
- 10 11. An isolated nucleic acid molecule which is the complement of a sequence according to Claim 10.
12. An isolated nucleic sequence molecule consisting of a polynucleotide sequence which is at least 90% identical to a sequence selected from the group consisting of SEQ ID NOS: 30-39.
- 15 13. An isolated nucleic sequence molecule consisting of at least a polynucleotide sequence which is at least 90% identical to a sequence selected from the group consisting of SEQ ID NOS: 40-47.
14. A method of detecting the presence or absence of a mutation or a polymorphism in a neuronal gene in a mammal, comprising the steps of:
- 20 (a) contacting a test sample comprising the neuronal gene with at least one nucleic acid sequence selected from the group consisting of SEQ ID NOS: 30-47;
- (b) maintaining the test sample DNA and the nucleic acid sequence under conditions suitable for interaction; and

- (c) detecting the interaction between the test sample DNA and the nucleic acid sequences.
15. The method of Claim 14, wherein the neuronal gene is selected from the group consisting of: TOR1A, TOR1B, TORP1, and TORP2.
- 5 16. The method of Claim 14, wherein the detecting step is performed by a nucleic acid amplification reaction.
17. The method of Claim 14, wherein the detecting step is performed by a single strand conformation polymorphism analysis.
18. The method of Claim 14, wherein the test sample is selected from the group
10 consisting of a body fluid or a tissue sample.
19. The method of Claim 14, wherein the mammal is a human who is at increased risk of developing a neuronal disease selected from the group consisting of a movement disorder, a neurodegenerative disease, a neurodevelopmental disorder and a neuropsychiatric disease.
- 15 20. The method of Claim 14, wherein the mammal is a human afflicted with a neuronal disease selected from the group consisting of a movement disorder, a neurodegenerative disease, a neurodevelopmental disorder and a neuropsychiatric disease.
21. The method of Claim 14, wherein the neuronal gene is a gene located in the
20 central nervous system or the peripheral nervous system.
22. The method of Claim 14, further comprising the steps of:

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- (d) isolating the test sample neuronal gene; and
- (e) determining the sequence of the isolated gene.

23. The method of Claim 21, wherein the neuronal gene is located in the central nervous system in a region selected from the group consisting of cerebellum, locus ceruleus, substantia nigra and hippocampus.
24. A method of detecting the presence or absence of a dopamine-mediated disease in a mammal comprising detecting the presence or absence of one or more mutations in a neuronal gene, comprising the steps of:
- (a) contacting a test sample comprising the neuronal gene with a nucleic acid sequence selected from the group consisting of SEQ ID NOS: 30-47;
 - (b) maintaining the test sample and the nucleic acid sequence under conditions suitable for interaction; and
 - (c) detecting the interaction between the test sample and nucleic acid sequence.
25. The method of Claim 23, wherein the detecting step (c) is performed by a nucleic acid amplification reaction.
26. The method of Claim 23, where in the detecting step (c) is performed by single strand conformation polymorphism analysis.
27. A method of detecting the presence or absence of Parkinson's disease in a human comprising detecting the presence or absence of one or more mutations in a neuronal gene, comprising the steps of:

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- 5 (a) contacting a test sample comprising the neuronal gene with a nucleic acid sequence selected from the group consisting of SEQ ID NOS: 30-47;
- (b) maintaining the test sample and the nucleic acid sequence under conditions suitable for interaction; and
- (c) detecting the interaction between the test sample and nucleic acid sequence.

28. A gene comprising a gene mutation resulting in a dopamine-mediated disease in a mammal detected by a method comprising the steps of:

- 10 (a) contacting a test sample comprising the gene with a nucleic acid sequence selected from the group consisting of SEQ ID NOS: 30-47;
- (b) maintaining the test sample and the nucleic acid sequence under conditions suitable for interaction; and
- 15 (c) detecting the interaction between the test sample and nucleic acid sequence, wherein the gene mutation results in the dopamine-mediated disease.

29. A gene comprising a mutation or polymorphism responsible for a neuronal disease in a mammal detected by a method comprising the steps of:

- 20 (a) contacting a test sample comprising the gene with a nucleic acid sequence selected from the group consisting of SEQ ID NOS: 30-47;
- (b) maintaining the test sample and the nucleic acid sequence under conditions suitable for interaction; and
- 25 (c) detecting the interaction between the test sample and nucleic acid sequence, wherein the gene mutation results in the dopamine-mediated disease.

30. The method of Claim 29, wherein the neruonal disease is a disease selected from the group consisting of a movement disorder, a neurodegenerative disease, a neurodevelopmental disorder and a neuropsychiatric disease.